

Abstract

A distillate fuel steam reformer system in which a fuel feed stream is first separated into two process streams: an aliphatics-rich, sulfur-depleted gas stream, and an aromatics- and sulfur-rich liquid residue stream. The aliphatics-rich gas stream is desulfurized, mixed with steam, and converted in a reforming reactor to a hydrogen-rich product stream. The aromatics-rich residue stream is mixed with air and combusted to provide heat necessary for endothermic process operations. Reducing the amounts of sulfur and aromatic hydrocarbons directed to desulfurization and reforming operations minimizes the size and weight of the overall apparatus. The process of the invention is well suited to the use of microchannel apparatuses for heat exchangers, reactors, and other system components, which may be assembled in slab configuration, further reducing system size and weight.